

Message

From: Strynar, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=5A9910D5B38E471497BD875FD329A20A-STRYNAR, MARK]
Sent: 5/21/2018 12:24:32 PM
To: McCord, James [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=McCord, James]
Subject: FW: Analytical Standards

FYI,

Mark

From: Paul Resnick [mailto:[Ex. 6 Personal Privacy \(PP\)](#)]
Sent: Tuesday, May 08, 2018 11:34 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: Re: Analytical Standards

Thanks,

I think I noted that PPVE, $\text{CF}_3\text{CF}_2\text{CF}_2\text{OCF}=\text{CF}_2$ could thermally rearrange to $\text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{COF}$ which then in turn would react with water to give $\text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{COOH}$. I think you mentioned that you may have found this acid in your samples.

Well the analogous rearrangement of $\text{FSO}_2\text{CF}_2\text{CF}_2\text{OCF}(\text{CF}_3)\text{CF}_2\text{OCF}=\text{CF}_2$ gives $\text{FSO}_2\text{CF}_2\text{CF}_2\text{OCF}(\text{CF}_3)\text{CF}_2\text{CF}_2\text{COF}$ that will react with water to give your PFESA BP4.

Two questions:

(1) How do you know that the solution is 1% and that there are not other inorganic or organic impurities? My guess is that the standards were made by adding a known weight [known number of moles] of say $\text{FSO}_2\text{CF}_2\text{CF}_2\text{OCF}(\text{CF}_3)\text{COF}$ to water, adding base and heating to give $\text{NaO}_3\text{SCF}_2\text{CF}_2\text{OCFHCF}_3$ [NVHOS] in a quantitative reaction. Then water is added to give the desired concentration of NVHOS. This would mean that the sample would contain NaF and most likely NaOH, NaHCO_3 and Na_2CO_3 . This would be the easy way to get standards with a specific concentration of the desired material. The $\text{CF}_3\text{O}(\text{CF}_2\text{O})_n\text{CF}_2\text{COOH}$ are probably made from the corresponding methyl or ethyl esters.

(2) May I assume that the sodium salts are the best samples? They are solids. I would also suspect that they would be the best for toxicity studies. Remember that all the compounds noted in the acid form are strong acids.

Paul

From: Strynar, Mark
Sent: Monday, May 07, 2018 11:27 AM
To: Paul Resnick
Subject: RE: Analytical Standards

I just went through what we have onsite this AM. As far as interest it depends on the matrix. Water, fish tissue and human serum have different priorities. I would say all of those listed below as Na salts would be fantastic. I would say the lowest priority is the PFESA BP1 as we do not normally find much of it relative to the others. From there it is hard to order them for priority.

I do not have the HFPO-TA but I can easily get it from Synquest as a free acid (CAS 13252-14-7)

I have:

CF₃CFHOCF₂CF₂SO₃⁻ (NVHOS)

OS(=O)(=O)C(F)(F)FOC(F)(F)FOC(F)(F)FOC(F)(F)F

Subject: Analytical Standards

It was good to speak with you today. As noted the standards will be available from Fluorix, a small company located in Nevada. Their website is <https://fluorix.com/> and your contact is David Offord, the founder of the company. David is a Ph.D chemist and well versed in fluorine chemistry and I suggest that you should contact him concerning analytical samples for your work. I have discussed this in general with David so knows some specifics but my view is that direct contact between the two of you would put everyone on the same page.

Hopefully, could you please supply a list of the standards you need and if possible some sort of general ranking with regards those of most interest. From our conversation I know there is interest among others in standards for:

$\text{CF}_3\text{O}(\text{CF}_2\text{O})_n\text{CF}_2\text{COO}^- \quad n = 1, 2, 3, 4,$
 $\text{CF}_2=\text{CFOCF}_2\text{CF}(\text{CF}_3)\text{OCF}_2\text{CF}_2\text{SO}_3^-$
 $\text{CF}_3\text{CFHO CF}_2\text{CF}(\text{CF}_3)\text{OCF}_2\text{CF}_2\text{SO}_3^-$
 $\text{CF}_3\text{OCF}(\text{CF}_3)\text{COO}^-$
 $\text{CF}_3\text{CF}_2\text{OCF}(\text{CF}_3)\text{COO}^-$
 $\text{CF}_3\text{CFHO CF}_2\text{CF}_2\text{SO}_3^-$

May I assume that you have enough of Gen-X, [$\text{CF}_3\text{CF}_2\text{CF}_2\text{OCF}(\text{CF}_3)\text{COO}^-$] from HFPO dimer and $\text{CF}_3\text{CF}_2\text{CF}_2\text{OCF}(\text{CF}_3)\text{CF}_2\text{OCF}(\text{CF}_3)\text{COO}^-$ the analogous compound from HFPO trimer?

I hope that this will all work out well for everyone.

Best regards,

Paul

P.S. How did the talk to the water people go?